

秋海棠属孟连秋海棠的补充订正*

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摘要: 孟连秋海棠 (*Begonia menglianensis* Y. Y. Qian) 曾被归并到歪叶秋海棠 (*Begonia augustinei* Hemsl.)。经过对比模式标本和模式产地标本, 作者发现孟连秋海棠是个独立的种, 在果的形态上它与大王秋海棠 (*Begonia rex* Putz.) 最为相似, 但果实上最大翅的上缘有一个近三角形的平面可以很容易将二者分开。作者提供了该种的形态描述, 并对花粉和种子形态进行了扫描电镜观察。

关键词: 歪叶秋海棠; 孟连秋海棠; 大王秋海棠; 订正; 分类学

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Notes on the Species Status of *Begonia menglianensis*

Y. Y. Qian (Begoniaceae)

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Abstract: *Begonia menglianensis* Y. Y. Qian was regarded as a synonym of *Begonia augustinei* Hemsl. After comparing the type and additional collections made from the type locality, we found that this species is distinct, and mostly similar to *Begonia rex* Putz. in its fruit morphology. However, it can be easily distinguished by its flat and nearly triquetrous superior edge of the major fruit wing. Together with information on its pollen and seeds observed under Scanning Electronic Microscope, a revised description for *B. menglianensis* is provided.

Key words: *Begonia augustinei*; *Begonia menglianensis*; *Begonia rex*; Revision; Taxonomy

Begonia L., including ca. 1550 species and 63 sections, usually grows in hot and humid habitats and widely distributed in tropical and subtropical areas in Asia, America and Africa (Doorenbos *et al.*, 1998; Ku *et al.*, 1999; Shui *et al.*, 2002; Hughes, 2008; de Wilde, 2011). *Begonia* sect. *Platycentrum*

(Klotzsch) A. DC, with about 63 species, is one of the largest sections in China (Shui *et al.*, 2002; Ku *et al.*, 2007). In the past decades, a number of new species of sect. *Platycentrum* have been discovered in China, viz. *B. coelocentroides* Y. M. Shui & Z. D. Wei (Wei *et al.*, 2007), *B. coptidifolia* H. G. Ye,

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F. G. Wang, Y. S. Ye & C. I. Peng (Ye *et al.*, 2004), *B. crocea* C. I. Peng (Peng *et al.*, 2006), *B. hongkongensis* F. W. Xing (Xing, 2005), *B. rubinea* H. Z. Li & H. Ma (Li *et al.*, 2005), and *B. tetralobata* Y. M. Shui (Shui, 2007).

Here, we studied *Begonia menglianensis* Y. Y. Qian (sect. *Platycentrum*) (Qian, 2001) from southwestern China. Only a few species in this section in China have up to 2.5 cm long major wings on the fruits, such as *B. coptidifolia*, *B. hongkongensis*, *B. laminariae* Irmsh., *B. longialata* K. Y. Guan & D. K. Tian, *B. rex* Putz., and *B. versicolor* Irmsh. (Ku *et al.*, 2007). Among them, *B. menglianensis* is most similar to *B. rex* in leaf and fruit morphology, and differs from the other species by its non-lobed leaves. Nevertheless, our study shows that *B. menglianensis* can be easily diagnosed by its fruit morphology.

Based on the presence of short hairs densely covering the upper surfaces of leaves, Shui *et al.* (2002) synonymized *B. menglianensis* under *B. augustinei* Hemsl. However, the synonymy was considered questionable in the *Flora of China* (Ku *et al.*, 2007). Recently, we examined specimens related to *B. augustinei* and *B. menglianensis* in BM, HAST, HITBC, KEW, KIB, PE and made further collections at the type locality of *B. menglianensis*. Based on our observation, we concurred that its specific status should be resurrected from synonym with *B. augustinei*, and hereby revised the description of *B. menglianensis*.

孟连秋海棠 (Fig. 1)

Begonia menglianensis Y. Y. Qian, in Acta Phytotaxonomica Sinica. **39** (5): 461, Fig. 1. 2001.

Type: China. Yunnan: Menglian County, alt. 1 800 m, in forests, 18 Nov. 1993, Y. Y. Qian 3310 (holotype, PE1349772!; isotype, HITBC, KUN 0832852!, SMAO).

Additional specimens examined

China. Yunnan Province, **Menglian County:**

Lafu Village, Daheishan mts, 6 Nov. 2010, J. W. Li CX00186 (HITBC); same location, 8 Nov. 2010, S. S. Zhou 7715 (HITBC); same location, alt. 1 800 m, 22°06'44.47" N, 99°25'13.08" E, 19 Jul. 2014, Y. M. Shui *et al.* B2014-232 (KUN); Boundary between China and Myanmar, 6 Nov. 2010, J. W. Li 325 (HITBC); Lafu Dam, alt. 1 450 m, broad-leaved forest, 19 Sep. 2006, C. I. Peng 20969 (HAST); same location, alt. 1 564 m, 22°07'52.43" N, 99°26'07.22" E, 18 Jul. 2014, Y. M. Shui *et al.* B2014-195 (KUN); same location, alt. 1 588 m, 22°07'44.26" N, 99°25'25.07" E, 19 Jul. 2014, Y. M. Shui *et al.* B2014-205 (KUN); **Ximeng County:** Mengsuolongtan Park, 19 Sep. 2006, J. Sh. Sheng s. n. (YFS); same location, 14 Feb. 2011, J. W. Li CX00158 (HITBC); same location, alt. 1 150–1 200 m, 22°38' N, 99°35' E, 7 Feb. 2012, Y. M. Shui *et al.* B2012-18 (KUN).

Revised species description

Herbs perennial, stemless, rhizome 3–14 cm long, 0.5–1.0 cm in diam, densely covered with 2–5 cm long ferruginous hairs. Stipules ovate to subtriangular, 5–15 × 3–5 mm. Leaves: numerous, basal; petiole 6–15 cm long, densely covered with 2–5 mm long ferruginous hairs; leaf blade reniform to broadly ovate, 6–16 × 7–20 cm, uneven, adaxially blackish green, abaxially dark green, margin not lobed, ferruginously and shortly ciliolate, lateral veins 4–7-paired on each side of midrib, venation palmate, abaxially densely covered with 0.5–1.0 mm long ferruginous hairs. Inflorescences axillary, dichasium, 3–7-flowered; peduncle 6–18 cm long, laxly covered with 2–4 cm long ferruginous hairs; bracts caduceous, glabrous, triangular to oblong, 5–7 × 2–5 mm. Staminate flowers: pedicel 2–5 cm long; tepals 4, white to pinkish, outer 2 ovate to round, 1.9–2.2 × 1.9–2.1 cm, sparsely and ferruginously hairy outside, inner 2, broadly obovate or spatulate, 1.6–2 × 1.1–1.5 cm; stamens, numerous, yellow, 0.3–0.5 cm long, anthers oblong, 2–3 mm long, connective obtuse at apex; filaments 1–

2 mm long, fused at base. Pistillate flowers: pedicel pink to green, 1.7–2.3 cm long, tepals 5, white to pink, outer 4, ovate to round, 1.4–1.9 × 0.6–1.3 cm, sparsely and ferruginously hairy outside, inner 1

obovate, 1.5–2 × 1.3–1.4 cm; styles 2, yellow, 0.6–0.8 cm long, fused at base, with stigmatic papillae in a spiral arrangement. Ovary: red to green, trigonous or subellipsoid, 0.8–1 cm long, 2-loculed,

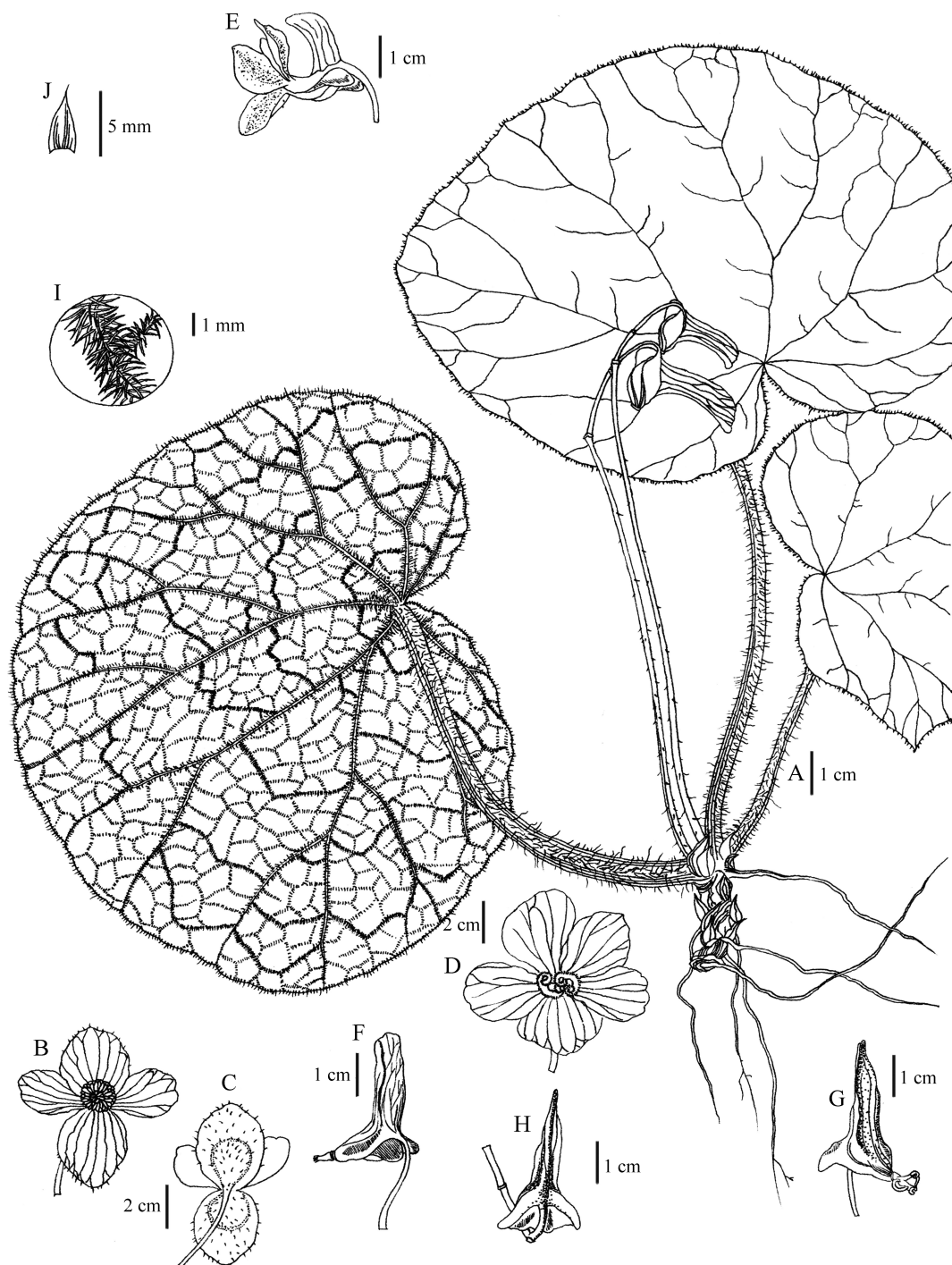


Fig. 1 *Begonia menglianensis* Y. Y. Qian (from Y. M. Shui *et al.*, B2012-18, drawn by ZHANG Rong-Mei)

A. Habit; B. Adaxial view of staminate flowers; C. Abaxial view of staminate flowers; D. Adaxial view of pistillate flowers;

E. Side view of pistillate flowers; F. Young fruit; G. Young fruit, upper edge of major wing; H. Young fruit, lower edge of major wing; I. Hairs on major veins of abaxial leaf surface; J. Bract

placentation axile. Fruit: nearly ellipsoidal, brownish, unequally three-winged, lateral wings subequal, nearly crescent-shaped, 0.4–0.7 cm long, major wings of fruits nearly oblong, apex rounded, 2.5–3.2 cm long, upper edge with flat and nearly triquetrous surface, the flat surface 1.5–2 × 0.7–1 cm, with 3–5 ridges (Fig. 2; G, a). Flowering is from Dec to Feb, fruiting is from Jan to Mar.

SEM observation of pollen

Pollen ellipsoidal, 3-zonocolporate, mean size *ca.* 21 × 9.4 μm with a length: width ratio of 2.2. Pollen exine coarsely striate with or without pores and margo up to the polar surface, ridge sculpture at the germ pore (Fig. 3; A–D).

SEM observation of seeds

Seed obovate, mean size *ca.* 370 × 230 μm with a length: width ratio of 1.6. Collar cells polygonal, *ca.* 132 μm in length, elongated 2/3 of the seed length. The other testa cells oblong, *ca.* 130 × 20 μm, less than 1/3 of the seed length. The operculum is broadly nipple-shaped, the ornamentation of collar cell is nearly parallel straight or short undulated. Anticlinal walls straight (Fig. 3; E–I).

Distribution and habitat

The species is currently known only from Menglian County and Ximeng County in Yunnan, China. It grows on shady stone surfaces in evergreen forests at alt. 1 150–1 800 m.

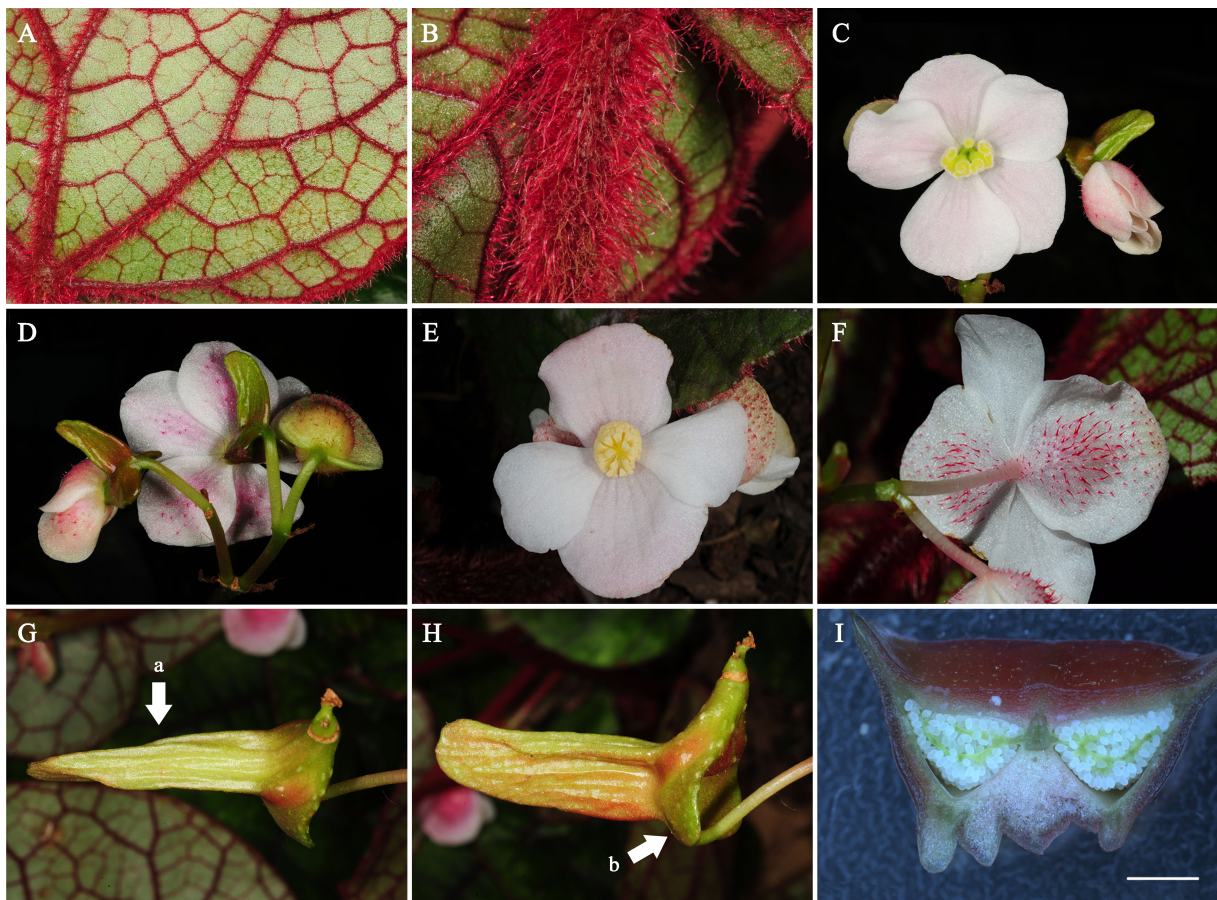


Fig. 2 *Begonia menglianensis* Y. Y. Qian

A. Abaxial leaf surface; B. Ferruginous hairs on the petiole; C. Adaxial surface of pistillate flowers; D. Abaxial surface of pistillate flowers; E. Adaxial surface of staminate flowers; F. Abaxial surface of staminate flowers; G. Young fruit, major wing with flat and nearly triquetrous superior edge (a); H. Side view of young fruit with enlarged inferior edge of the minor fruit wings (b); I. Ovary cross-section, showing two locules (Scale bar: I=2 mm). (A–B and E–I taken by SHUI Yu-min, C–D taken by ZHAO Dong-wei)

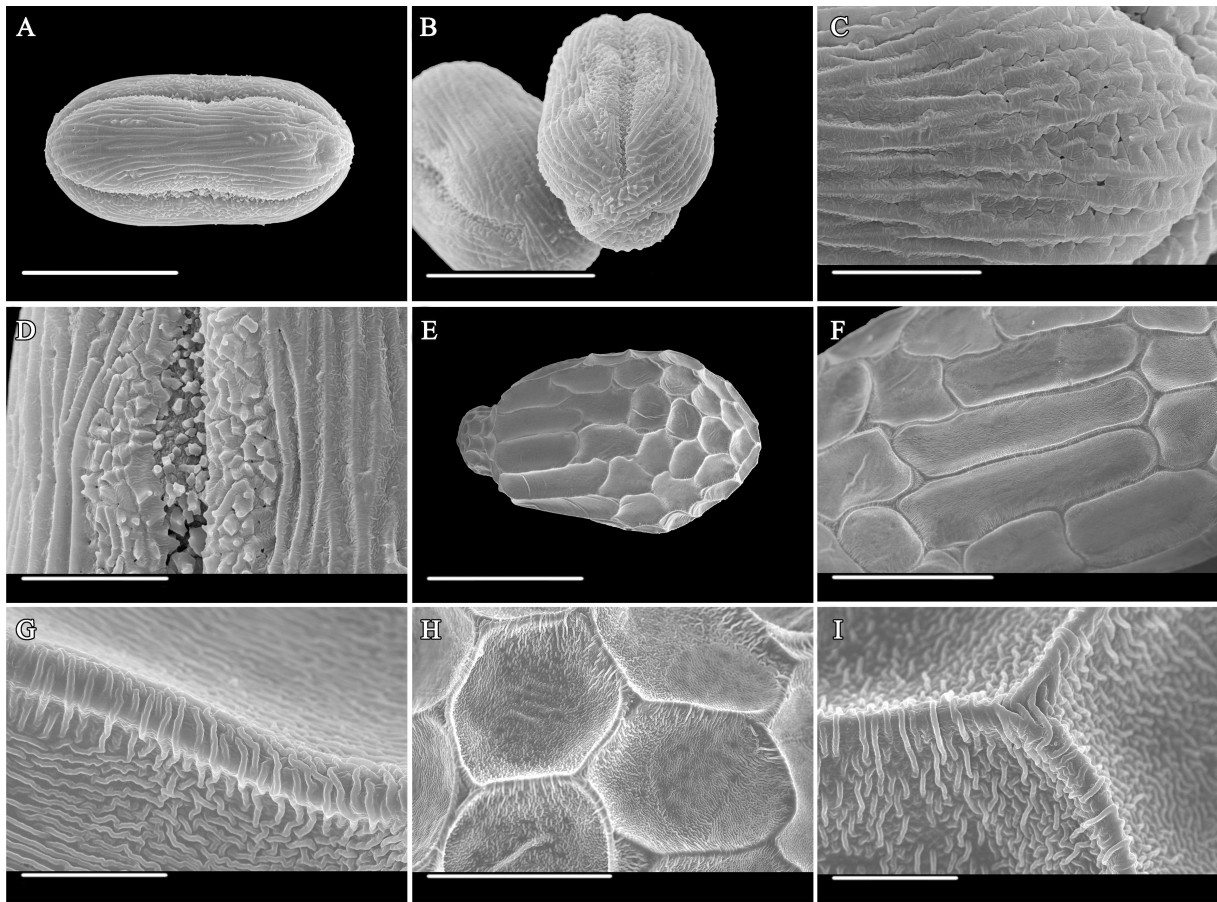


Fig. 3 Micromorphology of pollen and seed of *Begonia menglianensis*

A–D. Pollen: A. Side-view; B. Polar view; C. Coarsely striate exine ornamentation; D. Colpus and aperture; E–I. Seed: E. Side-view; F. Collar cells; G. Ornamentation of collar cells; H. other testa cells; I. Ornamentation of other testa cells (Scale bar: C, D = 3 μm ; A, B, G, I = 10 μm ; H = 50 μm ; F = 100 μm ; E = 200 μm) (A–D taken by SHUI Yu-min, E–I taken by YANG Zhen-zhen)

Morphological comparison

Qian (2001) indicated that *B. menglianensis* is similar to *B. versicolor* in habit. However, *B. versicolor* has 3 styles and stigmas as well as dense, long tubercular setae on leaf abaxial surface. In view of features of style and stigma, *B. menglianensis* resembles *B. augustinei* in sharing two styles and stigmas. It considerably differs from *B. augustinei*, which has dense short tubercular setae on the abaxial leaf surface and enlarged superior edge of the two minor fruit wings. On the other hand, with subglabrous leaves and fruits more than 2.5 cm long, *B. menglianensis* is more similar to *B. rex* than to the other two species.

Discussion

The type materials of *B. menglianensis* were in

poor condition. Firstly, the type specimens were inadequately prepared with numerous holes from insects and without mature fruits and detailed collection information. We had no accurate information about the species until we collected it at almost the same collection site and at the same altitude as shown in type specimen. Like the type specimens, the leaves of our newly collected specimens are with numerous holes from insect damages. This seems to be a consistent feature of the species at the type locality. Secondly, the fruit was incorrectly shown in the figure of the protologue (Qian, 2001), which might be the reason why the species was incorrectly synonymized under *B. augustinei* (Shui *et al.*, 2002). Based on the present study, the species is unique among the species of sect. *Platycentrum* for its flat and

nearly triquetrous superior edge of the major fruit wings (Fig. 2: G, a) and enlarged inferior edge of the two minor fruit wings (Fig. 2: H, b). Given the morphological evidence presented here, the species status of *B. menglianensis* should be resurrected.

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